Space Weather Forecast

Issued on Friday, 03 November 2023 at 13:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Further Moderate-class likely flares throughout. G1/G2 Minor/Moderate geomagnetic storms likely day 3 (05 Nov).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with two Moderate class flares in the past 24 hours. There is a large and complex spot in the southwestern quadrant, another large spot in the southeast, east of which was responsible for one of the Moderate class flares. There is also a new spot that has rotated around the southeast limb, which appears to be magnetically complex. All other regions are small and simple.

A large filament eruption was detected around 03/0430 UTC from the northwest quadrant. This has yet to be modelled completely but initial expectations are for an Earth-directed CME to arrive later on 05 Nov.

Solar Wind / Geomagnetic Activity: Solar wind speeds have been at background levels. Total magnetic field strength has been weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet throughout.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained close to background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is expected, with further isolated Moderate-class flares likely.

Solar Wind / Geomagnetic Activity: Two coronal mass ejections feature in the forecast, one from 31/2200 UTC which may arrive late 04 or early 05 Nov, and another from 03/0430 UTC which is expected to arrive later on 05 Nov. Solar wind speeds are slow. The next enhancements will be from coronal mass ejections from late day 2 (04 Nov) with elevated to strong speeds, followed by a coronal hole high speed stream from later on day 4 (06 Nov).

Quiet geomagnetic activity initially with a chance of isolated Unsettled intervals. Unsettled to Active levels and a slight chance of G1/Minor Storms are possible during the latter part of day 2 (04 Nov) or more likely early day 3 (05 Nov) due to the glancing CME from 31 Oct. Later day 3 (05 Nov), G1/G2 Minor/Moderate storms will become likely with a slight chance of G3/Strong storms due to the arrival of the large filament eruption associated CME from 03 Nov. Day 4 (06 Nov) will likely see geomagnetic activity ease before the risk once again increases later due to the potential early arrival of the HSS from CH67/-.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at around background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.

Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	20	70	20
Strong	G3	No	1	1	15	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	50	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2023. All Rights Reserved.